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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/051,449

01/18/2002

Qian Zhang

214462

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12/14/2004

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EXAMINER

CONTEE, JOY KIMBERLY

ART UNIT

PAPER NUMBER

2686

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/051,449

**Applicant(s)**

ZHANG ET AL.

**Examiner**

Joy K Contee

**Art Unit**

2686

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17, 18, 22, 23 and 26-28 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 10, 11, 19-21, 24 and 25 is/are rejected.
- 7) ☒ Claim(s) 3, 6-9 and 12-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,2,4,5 and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Kinnunen et al. (Kinnunen), U.S. Patent No. 6,813,501.

Regarding claim 1, Kinnunen discloses in a mobile ad hoc network having a plurality of nodes, at least one node of which being a resource provider, a quality of service (QoS) aware resource discovery method, comprising the steps of:

generating at least one discovery agent from the plurality of nodes (col. 9, lines 51-52);

forming at least one dynamic domain within the ad hoc network, each dynamic domain including at least a subset of the nodes as members thereof and one discovery agent, the one discovery agent serving as a home discovery agent for its associated dynamic domain (col. 6, lines 43-63 and col. 9, lines 53-67);

registering a resource by the resource provider with the home discovery agent of the resource provider's associated dynamic domain (col. 10, lines 41-60);

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generating a query to discover the resource; and discovering the resource (col. 10, lines 8-60).

Regarding claim 2, Kinnunen discloses the method of claim 1, wherein the step of generating at least one discovery agent comprises the steps of: broadcasting, by all eligible nodes, existence information including a node address; electing the node that has the smallest node address as an initial discovery agent (col. 11, line 48 to col. 12, line 44).

Regarding claim 4, Kinnunen discloses the method of claim 1, wherein the step of forming at least one dynamic domain within the ad hoc network comprises the steps of: broadcasting, by a discovery agent, a formation announcement containing at least a distance field; comparing, by a receiving node, the distance field to a distance from the node's current home discovery agent; and when the distance field is less than the distance from the node's current discovery agent, and when the receiving node does not have a current home discovery agent, setting the discovery agent that broadcast the formation announcement as the node's new home discovery agent (col. 11, line 48 to col. 12, line 44).

Regarding claim 5, Kinnunen discloses the method of claim 4, further comprising the step of forwarding the formation announcement to the node's neighbors after the step of setting the discovery agent that broadcast the formation announcement as the node's new home discovery agent (col. 11, line 48 to col. 12, line 44).

Regarding claim 19, Kinnunen discloses in a mobile ad hoc network having a plurality of nodes, a method of generating a discovery agent, comprising the steps of: broadcasting, by all nodes, existence information including a node address; electing the node that has a smallest node address as an initial discovery agent; selecting, by the initial discovery agent, a preselected subset of the nodes to be discovery agents; and wherein non-discovery agent nodes form dynamic domains by associating with one of the discovery agents (col. 11, line 48 to col. 12, line 44).

Regarding claim 20, Kinnunen discloses in a mobile ad hoc network having a plurality of nodes, a subset of the nodes assuming a role of a discovery agent, a method of forming a dynamic domain within the ad hoc network, comprising the steps of: broadcasting, by a discovery agent, a formation announcement containing at least a distance field; comparing, by a receiving node, the distance field to a distance from the node's current home discovery agent, if any; and when the distance field is less than the distance from the node's current discovery agent, and when the receiving node does not have a current home discovery agent, setting the discovery agent that broadcast the formation announcement as the node's new home discovery agent (col. 11, line 48 to col. 12, line 44).

Regarding claim 21, Kinnunen discloses the method of claim 20, further comprising the step of forwarding, by the receiving node, the formation announcement after the step of setting the discovery agent that broadcast the formation announcement as the receiving node's new home discovery agent. (col. 11, line 48 to col. 12, line 44).

Regarding claim 25, Kinnunen discloses in a mobile ad hoc network having a plurality of nodes arranged in dynamic domains, each dynamic domain having a home discovery agent, at least a subset of the dynamic domains having nodes therein providing resources to the network (col. 9, line 40 to col. 12, line 44).

Kinnunen fails to disclose a method comprising the step of estimating, by each home discovery agent, path quality of service (QoS) between nodes in its associated dynamic domain and those of another dynamic domain as the path latency between itself and the home discovery agent for the other dynamic domain.

In a similar field of endeavor, Doherty discloses inherently collecting, by a resource provider's home discovery agent, application-level quality of service (QoS) information from the resource provider {[005] and [0109]}.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify Kinnunen to include collecting and estimating QoS between nodes for the purpose of allowing equal QoS to users.

Regarding claim 10, Kinnunen discloses the method of claim 1, but fails to explicitly disclose comprising the step of collecting, by a resource provider's home discovery agent, application-level quality of service (QoS) information from the resource provider.

In a similar field of endeavor, Doherty discloses inherently collecting, by a resource provider's home discovery agent, application-level quality of service (QoS) information from the resource provider {[005] and [0109]}.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10,11, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinnunen, in view of Doherty et al. (Doherty), U.s. Patent Application Publication No. 2003/0048779.

Regarding claim 24, Kinnunen discloses in a mobile ad hoc network having a plurality of nodes arranged in dynamic domains, each dynamic domain having a home discovery agent, at least a subset of the dynamic domains having nodes therein providing resources to the network (col. 9, line 50 to col. 12, line 44).

Kinnunen does not explicitly disclose a method comprising the step of collecting, by a resource provider's home discovery agent, application-level quality of service (QoS) information from the resource provider.

In a similar field of endeavor, Doherty discloses inherently collecting, by a resource provider's home discovery agent, application-level quality of service (QoS) information from the resource provider {[005] and [0109]}.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify Kinnunen to include collecting and estimating QoS between nodes for the purpose of allowing equal QoS to users.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify Kinnunen to include collecting and estimating QoS between nodes for the purpose of allowing equal QoS to users.

]Regarding claim 11, Kinnunen discloses the method of claim 1, but fails to explicitly disclose comprising the step of estimating, by each home discovery agent, path quality of service (QoS) between nodes in its associated dynamic domain and those of another dynamic domain as the path latency between itself and the home discovery agent for the other dynamic domain.

In a similar field of endeavor, Doherty discloses inherently estimating, by each home discovery agent, path quality of service (QoS) between nodes in its associated dynamic domain and those of another dynamic domain as the path latency between itself and the home discovery agent for the other dynamic domain {[005] and [0109]}.

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify Kinnunen to include collecting and estimating QoS between nodes for the purpose of allowing equal QoS to users.

#### ***Allowable Subject Matter***

5. Claim 17-18,22-23,26-28 are allowed.
6. Claims 3,6-9,12-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.



7. The following is a statement of reasons for the indication of allowable subject matter: prior art of record fails to explicitly disclose selecting, by the initial discovery agent,  $M-1$  nodes to be discovery agents, where  $M$  is a preselected number of discovery agents; and assigning each of the selected nodes an index from the set  $\{2, 3, \dots, M\}$ , nor the method of claim 1, wherein the step of registering a resource by the resource provider with the home discovery agent of the resource provider's associated dynamic domain comprises the steps of: sending a resource registration request to the resource provider's home discovery agent, the registration request including an attribute  $a$  of the resource; calculating, by the home discovery agent, a hashing index  $\beta$  of the resource as  $\beta = H(a)$  in the set  $\{1, 2, \dots, M\}$ ; and distribute the resource registration request to discovery agents having an index of  $\beta, \beta+1, \dots, P+K-1$  for registration of the resource thereby, where  $K$  is a predetermined number of replications for the resource information.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Murto et al., U.S. Patent Application Number, 2004/0213409, discloses a service discovery access to user location.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joy K Contee whose telephone number is 703-308-

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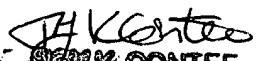
0149. The examiner can normally be reached on M (alternating), T & Th, 5:30 a.m. to 2:00 p.m.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on 703-305-4379. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JC

12/12/04

  
**J. K. CONTEE**  
**PATENT EXAMINER**